



MEMORANDUM

To: CMAP Committees

From: CMAP staff

Date: March 1, 2018

Re: Outline of the proposed recommendations of the ON TO 2050 environment element

This memo contains the proposed recommendations of the ON TO 2050 chapter on the environment. Since 2016, CMAP staff have conducted extensive research and collaborated with partners to develop ON TO 2050. The recommendations described in this memo were refined through numerous [strategy papers](#) and [snapshots](#), including the [Natural Resources Snapshot](#) and the [Climate Resilience](#), [Integrating Green Infrastructure](#), [Lands in Transition](#), [Water Resources](#), and [Stormwater and Flooding](#) strategy papers. These proposals build on GO TO 2040's focus on reinvestment, preserving open space, and fostering livable communities to explore new policies and strategies and provide implementers with more specific direction. This is the second of a series of memos that will be used to introduce the core concepts of ON TO 2050 and seek feedback from CMAP committees and stakeholders.

ON TO 2050 outline

ON TO 2050 will be conveyed primarily on the web. The structure assumes that readers will not approach the document linearly. The plan will be organized around five topical areas, each containing a set of recommendations that may repeat across chapters, as will some strategies within those recommendations. Each recommendation will describe its support for the three principles of the plan: Inclusive Growth, Resilience, and Prioritized Investment. The following lists the plan sections to provide context for land use chapter:

- Introduction
- Principles to move the region forward
 - State of the region
 - The three principles
- Engagement
- Land Use



- Environment: *Proposed recommendations provided below*
- Economy
- Governance
- Mobility

Proposed environment recommendations

ON TO 2050 strongly affirms that the region’s natural resources are critical to continuing to provide a high quality of life and vibrant economy. The region’s abundant water supply has been crucial to attracting people and investment, and its extensive green infrastructure network provides invaluable habitat and species diversity, protects environmental quality, aids in flood mitigation, and is an important line of defense against the impacts of climate change. In recent history, CMAP, counties, municipalities, conservation organizations, forest preserve districts, and others have made a sustained effort to protect, restore, and expand the region’s natural resources.

At the same time, natural resources face many challenges and new threats. While the region permanently preserved an additional 61,500 acres of natural and agricultural lands from 2001 to 2015, an additional 140,000 acres of these lands were lost to development – an area roughly equivalent to the land area of the City of Chicago. Despite increased awareness of the importance of environmental assets, constrained funding at all levels and competing priorities hinder our ability to adequately protect and enhance them. Climate change, which manifests in our region as more frequent and severe storms, extreme temperatures, and drought, is already significantly impacting our economy, ecosystems, and people. In particular, the region faces substantial flooding issues, which will continue to be exacerbated by the intense storms brought by climate change and increased impervious coverage from development. Flooding can cause extensive property damage and impaired water quality. And as development continues to push outward into the fringes of the region, groundwater supplies may dwindle while the costs of providing infrastructure and services rise, making continued expansion unsustainable. The impacts of these trends do not affect all populations equally. Vulnerable populations in particular may experience heightened risks, costs, and liabilities, including high water rates, compromised infrastructure, and repetitive flooding. ON TO 2050 proposes a comprehensive suite of actions by a range of stakeholders to address these and other environmental issues.

The following outlines the initial recommendations, strategies, and actions proposed for ON TO 2050 in the environment element. This proposal will be revised per stakeholder feedback, and followed by a full draft of the environment element of the plan.

Plan for climate resilience

Summary: The effects of climate change will have significant implications for the built environment, economy, ecosystems, and people of this region. The region must prepare for and be poised to recover from the acute shocks, such as extreme flooding events, and chronic stresses, such as long-term damage to transportation infrastructure, posed by climate change.

Planning for climate resilience entails a wide variety of strategies that work to reduce risk, strengthen our built and natural environment, and improve our operational response to specific events. Regional stakeholders, from local elected officials to business leaders, need access to up-to-date data on climate science to make informed decisions. At the same time, many resilience strategies require coordinated sub-area, regional, or statewide action. Resilient and livable communities should also continue to mitigate the emissions that contribute to climate change.

The following outlines strategies and associated actions to implement this recommendation.

Incorporate climate resilience and adaptation measures into planning and development

- *CMAP* should develop an approach for integrating climate change and vulnerability into local planning efforts, and employ that approach through the LTA program.
- *CMAP, counties, and other partners* should support continued pre-disaster planning efforts and identify opportunities for coordination.
- *CMAP and other partners* should identify planning best practices and strategies to meet resilience goals.
- *CMAP, municipalities, and counties* should allow for and encourage the development of decentralized and renewable energy systems.
- *Municipalities and counties* should integrate climate impacts and vulnerability into relevant plans and regulations and coordinate with appropriate actors during planning processes, with particular attention to engaging vulnerable populations.
- *CMAP and partners* should analyze the effects of climate change on vulnerable populations and develop strategies to build resilience for those residents.

Increase community greening efforts

- *Municipalities, park districts, and transportation agencies* should invest in greening strategies, such as street right-of-way landscaping, urban forestry, and community gardens, particularly in locations where limited open space opportunities exist and underserved areas.
- *Municipalities and park districts* should enhance community parks and recreational spaces to achieve multiple co-benefits.
- *Municipalities, transportation agencies, and landowners* should incorporate site-scale green infrastructure, trees, landscaping, etc. into non-park spaces, including street right-of-ways, parking lots, corporate and office campuses, and residential subdivisions.

Strengthen transportation infrastructure to withstand climate change

- *Transportation implementers* should design transportation infrastructure for the climate of its designed lifespan.
- *CMAP* should incorporate climate resilience criteria in its evaluation of regionally significant projects and transportation programming.
- *Transportation implementers* should conduct studies to determine the vulnerability of transportation infrastructure to climate change impacts.
- *State and local infrastructure agencies* should review and update design manuals to ensure that the underlying climate data being used are up to date.
- *Service providers* should ensure redundant and reliable electricity and communications infrastructure.

Improve the operational response to weather events to ensure mobility

- *Cook, DuPage, Kane, Kendall, McHenry, and Will Counties* should implement traffic management centers in their jurisdictions and make real time road weather information available.
- *Transportation implementers* should expand ITS devices and traffic management capabilities to support weather responsive traffic management strategies.
- *Transportation implementers* should coordinate snow and ice removal across jurisdictions, when possible.
- *Transportation operators* should perform an analysis of road performance under severe weather conditions to develop planned responses.
- *CMAP* should develop a regional pavement flooding reporting system to help plan for flood events.

Provide data and resources to build climate literacy and facilitate informed decisions



- *CMAP, the Illinois Climatologist Office, Illinois State Water Survey, Midwestern Regional Climate Center, and others* should broadcast the existence of climate data and related resources and help translate the utility of these resources to decision makers.
- *CMAP, the Illinois Climatologist Office, Illinois State Water Survey, Midwestern Regional Climate Center, and others* should downscale regional climate models to facilitate local application, investigate climate impacts on our water and land resources, and pursue the development of other relevant data and research.

Explore a platform for coordinating regional climate resilience initiatives

Manage stormwater to reduce flooding

Summary: Flooding presents significant economic, social, infrastructural, and environmental challenges that can make it difficult for communities to implement regional and local goals. Extreme storm events are predicted to increase, yet much of the region’s grey and green infrastructure system already struggles with today’s storms. The region must advance planning and development techniques to reduce current and future flooding risk. Armed with up-to-date precipitation trends and floodplain maps, municipalities can work to protect natural areas, streamline development techniques that reduce runoff, and integrate stormwater management best practices into public investments, such as streets and neighborhood parks. The region should continue to work to identify the most vulnerable portions of our transportation network to maintain mobility under changing climate conditions.

The following outlines strategies and associated actions to implement this recommendation.

Identify and communicate flooding risk

- *FEMA, IDNR, and County stormwater agencies* should update floodplain maps to reflect current precipitation and development conditions.
- *IDNR* should regularly update precipitation data and explore options to account for future climate scenarios.
- *County stormwater agencies and municipalities* should continue advancing watershed and sewer modeling efforts.
- *Municipalities* should communicate risk and possible solutions to residents and businesses.
- *CMAP and partners* should continue to develop planning tools to understand and plan for urban flooding risk.

- *IDNR* should implement efforts to ensure that the sale of property is informed by accurate flood risk information.
- *Congress* should reform the NFIP to adequately identify and communicate risk.

Advance planning and development techniques to reduce current and future risk

- *Counties* should continue to update stormwater management ordinances and performance standards to reflect best practices and emerging information about climate change and development trends.
- *CMAP* should convene counties to facilitate an exchange of information about regulatory updates that advance stormwater management practices.
- *IDNR, counties, and municipalities* should continue to advance floodplain management techniques and compliance.
- *Counties and municipalities, as well as the CMAP LTA program,* should update plans and ordinances and design standards to improve stormwater and floodplain management.
- *CMAP and partners* should coordinate flood reduction and water quality improvement efforts.
- *Counties and municipalities* should continue to develop pre-disaster plans for future flooding events.

Maintain and invest in grey and green infrastructure

- *Counties and municipalities* should utilize the regional flooding susceptibility index and modeling efforts to prioritize mitigation investments.
- *Counties, municipalities, and other infrastructure managers* should enhance maintenance of grey and green infrastructure.
- *CMAP and partners* should explore the use of transfers, credits, and water quality and volume trading programs to achieve regional water resource goals.
- *Municipalities, counties, and land managers* should protect and expand open spaces to enhance stormwater management.
- *Counties and municipalities* should pursue property acquisition and buyouts to remove people and property from high flood risk areas.

- *Counties and municipalities* should develop stormwater utility fees to assess the true cost of stormwater infrastructure and improve flood control infrastructure.
- *Congress* should reform the National Flood Insurance Program to prioritize assistance to address repetitive loss properties.

Address flooding vulnerability of the transportation network

- *Transportation implementers* should conduct studies to determine the flooding vulnerability of transportation infrastructure.
- *CMAP and partners* should conduct a regional climate vulnerability assessment to inform long-range transportation planning and programming.
- *CMAP* should assess flood vulnerability in its evaluation of regionally significant projects
- *Transportation implementers* design transportation infrastructure for the climate of its designed lifespan

Integrate stormwater management into transportation projects

- *CMAP and partners* should support continued efforts to integrate stormwater management into land use and transportation planning projects.
- *IDOT* should update design standards to reflect precipitation trends and green infrastructure techniques.
- *IDOT* should support stormwater management planning to reduce flooding vulnerability of the transportation system and design transportation infrastructure for the climate of its designed lifespan
- *Counties and municipalities* should update development ordinances and reconstruction practices to improve stormwater management.

Protect and enhance the integrity of aquatic systems

Summary: The region has a wealth of water resources, including many wetlands, lakes, rivers, and streams. While we have made substantial improvements in water quality, resources are still plagued by agricultural and urban stormwater runoff and the loss of habitat. Many of our challenges are the result of isolated actions that do not consider the interconnected nature of

water resources. The region must align and coordinate actions to improve watershed health. State regulations and programs can help to coordinate across water sectors as well as jurisdictional boundaries. Watershed plans can take on multiple objectives to discover synergies with potential implementers. And as communities grapple with aging water infrastructure systems – including drinking water, wastewater, and stormwater – integrated approaches can provide essential, resilient, and reliable services now and into the future.

The following outlines strategies and associated actions to implement this recommendation.

Improve water resource management and coordination

- *The State* should develop a comprehensive water planning agenda and funding programs to integrate water supply, water quality, stormwater, and aquatic habitat objectives.
- *The State* should support and streamline data collection and research among various agencies, including IEPA, IDNR, ISWS, and ISGS
- *The State* should provide funding for CMAP to prepare an integrated water resource management plan for the region that addresses water quality, water supply, and stormwater management and includes a focus on natural areas and green infrastructure.
- *CMAP* should coordinate a cross-jurisdictional platform to engage local governments and community water resource managers (supply, stormwater, wastewater) to advance integrated, innovative, and watershed-based management across sectors and agencies.
- *CMAP and partners* should explore the use of transfers, credits, and water quality and volume trading programs to achieve regional water resource goals.
- *USEPA and federal partners* should advance stormwater management reform to better address non-point source pollution and flooding.

Incorporate water resource management into local planning

- *Local governments* should identify and protect water resources, as well as the water protection services provided by natural areas and open space, through the use of practices that minimize the expansion of impervious areas and encourage infill, compact, and contiguous development.
- *Municipalities, counties, and other land managers* should prioritize land acquisition and stewardship to maintain and enhance high quality water resources.

- *Local governments* should integrate watershed plan recommendations and other water quality improvements into development ordinances.
- *Counties* should continue to update stormwater management ordinances to reflect stormwater best management practices.
- *CMAP* should continue to integrate water resource management considerations into LTA projects.

Create and implement multi-objective watershed plans

- *CMAP, IEPA, and watershed management entities* should engage a diverse set of stakeholders, including stormwater and wastewater managers, in workgroups to plan and implement watershed plans.
- *CMAP* should continue to advance the state of the science of watershed planning, develop, and help implement watershed plans in the region.
- *CMAP* should support coordination between existing and future Fox and Kankakee River water users using a watershed planning approach to maintain flows, enhance water quality, and support long term water supply needs.
- *CMAP and partners* should explore funding opportunities and strategies that support collaborative efforts, such as the State Revolving Fund and the use of transfers, credits, and water quality and volume trading programs to achieve regional water resource goals.
- *Wastewater managers, stormwater managers, municipalities and counties* should focus efforts on addressing priority pollutants through watershed planning and implementation: nutrients, chlorides, and emerging pollutants such as pharmaceuticals.

Optimize water infrastructure investment

- *The state, local governments, utility and water management entities* should pursue resource recovery and close water system loops (use, capture, recovery, and reuse), including updating codes and standards, such as the state plumbing code, that would allow for such activities.
- *Wastewater managers* should continue to explore the use of wetlands or land application to help treat and manage wastewater.

- *The State* should continue to improve the State Revolving Fund loan program to incorporate flexible approaches to achieve water supply, water quality, and stormwater management goals.
- *The State, CMAP, and local governments* should connect infrastructure investments to sound planning, consider long-term asset management and maintenance costs of infrastructure expansion, and prioritize use of infrastructure funds to upgrade, rehabilitate, and optimize the use of existing system capacity before investing in expansion.
- *CMAP and the IEPA* should explore innovative wastewater planning approaches that protect water quality and satisfy other regional planning goals.
- *CMAP, municipalities, counties and watershed groups* should consider the protection of water resources when making wastewater service planning and infrastructure investment decisions, including separation of combined sewers and strategies to reduce the frequency of overflows.
- *Counties, municipalities, and other utility service providers* should consider shared services, consolidation, and other efficiency strategies in investment decisions to improve community fiscal health and resilience.

Be a steward of Lake Michigan and the Great Lakes

- *CMAP, USACE, IDNR, MPC, CCT, and other stakeholders* should continue to explore solutions to manage the Chicago River Waterways System, including implementation of the Our Great Rivers initiative.
- *Congress* should continue to fund investments that maintain the health of the Great Lakes, such as the Great Lake Restoration Initiative, the Water Resources Development Act, and efforts to prevent invasive species transfer.
- *CMAP and IDNR* should increase efforts to focus and coordinate the Coastal Management Program with priority coastal issues
- *IDNR, Chicago and other local governments, and coastal landowners* should work together to protect and restore coastal nearshore and shoreline aquatic and terrestrial habitat and migratory flyways.
- *CMAP* should work with regional partners to implement or incorporate the Lake Michigan Lakewide Management Plan update anticipated for 2018 into local planning efforts.



- *Lake county stormwater agencies, MWRD, and other wastewater managers* should continue to reduce stormwater runoff and combined sewer overflows into the lake.
- *IDNR and coastal communities* should protect shorelines, coastal infrastructure, and support resource-compatible economic and recreational activities and access to the lake.

Manage shared water supply resources

Summary: Maintaining a long term supply of high quality drinking water -- from Lake Michigan to deep bedrock aquifers -- requires protection and sustainable management of our source waters. Understanding future water demand associated with new population growth and businesses is essential for the region as well as local decision makers. Assessing forecasted water demand against available water supply and infrastructure capacity can inform local planners on whether there is sufficient water supply and can encourage actions that reduce demand, protect supply, improve infrastructure, and pursue alternative drinking water sources.

The following outlines strategies and associated actions to implement this recommendation.

Incorporate water supply and demand considerations into local and regional planning

- *The State* should streamline community water supplier reporting requirements and improve data sharing across agencies.
- *The State* should fund critical surface and groundwater supply research and expand groundwater quality and quantity monitoring.
- *Local governments* should protect water sources, such as groundwater recharge areas, through land use planning techniques.
- *CMAP* should regularly update the regional water demand forecast in conjunction with socioeconomic forecast updates, and provide data to inform local water demand forecasts. Incorporating water demand into a future land use model would support this action.
- *Local governments and other community water suppliers* should conduct local water demand forecasts and incorporate findings in land use and infrastructure planning efforts.
- *CMAP and partners* should provide technical assistance to communities to incorporate local water demand forecasts in local plans.
- *Local governments* should review the expansion of drinking water services in new development with consideration of long-term water availability and infrastructure costs.

Strengthen regional water supply management

- *ISWS, IDNR, CMAP, and partners* should continue to disseminate information to groundwater-dependent communities on the potential effects of continued groundwater withdrawals and ramifications for future growth.
- *Community water suppliers* should regularly report water use to the State and consult ISWS on groundwater impacts of new development and wells.
- *Community water suppliers* dependent on constrained supplies should explore ways to coordinate water withdrawals to manage shared resources.
- *CMAP, NWPA, and partners* should continue local and sub-regional coordination efforts and explore the development of plans for existing and future Fox and Kankakee River users.
- *CMAP and partners* should explore management mechanisms to prevent groundwater overuse and the potential conflicts that groundwater shortage could cause.
- *IDNR and the State Water Task Force* should explore and advance specific state-wide groundwater protection authority changes to the legislature as part of the larger effort to improve state management of water resources.
- *Lake Michigan permittees* should follow the Lake Michigan Allocation Program requirements to maintain compliance with the US Supreme Court consent decree and meet Great Lakes compact provisions.
- *Municipalities*, working with counties and state partners, should develop contingency plans for droughts and other water emergencies that limit the availability of water.

Maintain drinking water infrastructure and manage demand

- *Community water suppliers* should implement asset management and water demand management strategies.
- *Community water suppliers* should utilize the IEPA State Revolving Loan Fund for low interest loans.
- *IEPA and partners* should continue asset management and water demand management training and support for community water suppliers.



- *Community water suppliers* should ensure safe, clean, abundant, and affordable water, and evaluate and address affordability impacts of rate increases on low-income customers.
- *IEPA, CMAP, and other partners* should target assistance to communities facing water affordability challenges, as well as those with high maintenance needs.
- *Community water suppliers*, particularly those contemplating alternative water sources or large-scale capacity changes, should explore costs and benefits of shared services and utility consolidation with nearby water suppliers.
- *IEPA, IDNR, CMAP, and other partners* should explore strategies, best practices, and appropriate conditions for water service consolidation.

Target preservation and stewardship efforts to key conservation and agricultural areas

Summary: Conserving the region’s highest quality natural resources and agricultural areas preserves their ecosystem benefits and complements the region’s overarching goal of reinvesting in already-developed areas. While preservation decisions are often driven in part by opportunity, strategic frameworks like the ON TO 2050 conservation areas layer can help maximize the benefits of land protection by coordinating different actors across jurisdictional boundaries. These efforts can occur anywhere in the region, but are particularly important at its developing edge. And when development of these lands does occur, sensitive land development techniques, such as conservation design, should be employed to preserve high quality natural areas to the extent possible.

The following outlines strategies and associated actions to implement this recommendation.

Identify and plan for the protection of high-priority natural areas and key agricultural lands

- *Counties, forest preserve districts, conservation organizations, land managers, and CMAP* should collaborate to collect and share data needed to update the conservation areas layer on a regular basis.
- *CMAP and conservation organizations* should investigate criteria to define high priority areas for restoration of natural resources within and between existing areas identified in the conservation areas layer.
- *CMAP and partners*, such as Natural Resource Conservation Service (NRCS), local soil and water conservation districts, counties, the Illinois Farm Bureau and local chapters, Farm Illinois, and Openlands, should work together to define an approach and methodology for identifying key agricultural lands, produce a preliminary map, and build consensus around those areas as regional priorities for preservation.

- *Counties, municipalities, forest preserve districts, conservation organizations, transportation agencies, and CMAP* should use the conservation areas layer and the key agricultural lands layer, when available, to inform local planning and development efforts.
- *CMAP and counties* should explore the types and value of ecosystem services provided by farmland, and should update the ecosystem service valuation study for natural areas to help communicate the value of these resources to stakeholders.

Prioritize and fund preservation and stewardship of critical lands

- *Forest Preserve and conservation districts, municipalities, and counties* should continue to raise essential funding through open space and agricultural easement referenda.
- *The State and federal governments, as well as philanthropic organizations,* should continue to fund IDNR and land managers via OSLAD, NAAF, and other programs to acquire and maintain high priority lands.
- *CMAP and partners* should explore how innovative financing mechanisms, such as water resource trading and transfer of development rights programs, could support open space protection efforts.
- *CMAP, land managers, and conservation partners* should explore the creation of a regional fund for conservation open space to focus investments on local and regional priorities.
- *CMAP, Forest Preserve and Conservation Districts, counties, and conservation organizations* should work with landowners, land managers, and each other to establish large reserves that consist of mosaics of land uses oriented towards conservation, such as the Hackmatack National Wildlife Refuge, Liberty Prairie Reserve, and Prairie Parklands.
- *The State, Forest Preserve and Conservation Districts, and private philanthropy* should work with land trusts to build their capacity, which will allow them to continue to engage and educate private landowners, accept more conservation easements of priority natural lands, and lead stewardship efforts.
- *The State* should establish a comprehensive farmland protection policy at the state level, which could include an agricultural conservation easement program and provide counties with the authority to fund farmland protection programs through local referenda, potentially opening up access to federal funding.

Diversify agricultural systems to promote resilience

- *Counties and local governments* in relevant areas should work together with chambers of commerce, economic development professionals, stakeholders, and the local or state Farm Bureau to plan for and address the needs for a more diversified agricultural system.
- *CMAP* should quantify the system's contribution to the region's economy and develop tools to understand agriculture's contribution to local economies to better inform local economic development strategies, land use planning, and transportation investments.
- *A partner should* create a regional platform of policy and development strategies to strengthen regional agricultural systems on a variety of fronts, including climate resilience and diversification, infrastructure and logistics, and land protection.
- *Municipalities, counties, and forest preserve and conservation districts* should encourage sustainable land management practices and implementation of the Nutrient Loss Reduction Strategy on agricultural lands, as well as NRCS-approved land resource management plans for farming activities near natural areas.

Deploy sensitive development techniques in new development

- *Appropriate counties and municipalities* (per the coordinated growth areas layer) should adopt conservation-oriented development standards and use the conservation areas layer to avoid key natural areas and identify sites that are good candidates for this development approach.
- *CMAP* should continue to encourage adoption of conservation-oriented development standards in appropriate communities through LTA ordinance update processes, and should investigate conservation design practices that work best with agricultural activities.
- *Municipalities* should use development impact fees and fiscal impact analyses to cover the initial costs of service provision, and exact adequate taxes and fees to cover the cost of infrastructure and services over the lifespan of each development.
- *Counties and municipalities* should conduct detailed development site inventories, impact assessments, and relationship to the larger Conservation Areas and green infrastructure network, and mitigate natural resource impacts of development through actions such as equivalent protection of conservation areas.
- *Municipalities* should consider the capacity of land and water resources to support growth in decisions about the intensity and extent of development.